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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,363	09/24/2003	Afif Osseiran	2380-781	4781

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EXAMINER	
NGUYEN, TUAN HOANG	
ART UNIT	**PAPER NUMBER**
2618	
MAIL DATE	**DELIVERY MODE**
06/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/668,363	OSSEIRAN ET AL.	
	Examiner	Art Unit	
	Tuan H. Nguyen	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response To Arguments

1. Applicant's arguments, see applicant's remarks, filed on 03/27/2007, with respect to the rejection(s) of claims 1-37 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (U.S PUB. 2005/0181832 hereinafter, "Ishii") in view of Schmid et al. (U.S PUB. 2004/0033791 hereinafter, "Schmidl").

Consider claim 1, Ishii teaches a method for use in a radio communications system with a radio base station that includes multiple antennas associated with a cell, comprising: selecting multiple mobile radios to receive a transmission over a shared radio channel during a predetermined transmission time interval (page 7 [0113]).

Ishii does not explicitly show that transmitting information over the shared radio channel to the multiple mobile radios in the cell during the predetermined transmission time interval using multiple antenna beams so that interference from the transmission appears as white noise in time and in space.

In the same field of endeavor, Schmidl teaches transmitting information over the shared radio channel to the multiple mobile radios in the cell during the predetermined transmission time interval using multiple antenna beams so that interference from the transmission appears as white noise in time and in space (page 2 [0023] and [0024]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, transmitting information over the shared radio channel to the multiple mobile radios in the cell during the predetermined transmission time interval using multiple antenna beams so that interference from the transmission appears as white noise in time and in space, as taught by Schmidl, in order to provide a method of normalization for multiantenna data channels with separate pilot channels and constant pilot/data amplitude ratio within a transmit time interval with normalizations by corrections of an initial normalization and/or with amplitude ratio estimation by averaging over an initial portion of the transmit time interval.

Consider claim 2, Schmidl further teaches the white noise is white additive Gaussian noise and one mobile radio is selected for one of the antenna beams (page 2 [0024]).

Consider claim 3, Schmidl further teaches the shared radio channel is a high speed-downlink shared channel (HS-DSCH) (page 2 [0020]).

Consider claim 4, Ishii further teaches receiving reports from mobile radios of a detected channel quality of a pilot signal transmitted in the cell (page 3 [0028]), and scheduling transmissions to multiple mobile radios over the HS-DSCH for each transmission time interval based on the received reports (page 4 [0058]).

Consider claim 5, Ishii further teaches selecting one of the mobile radios to receive a transmission from one of the antenna beams based on the received reports (page 2 [0025]), and transmitting the information over the HS-DSCH using each antenna beam to each selected mobile radio during the predetermined share time interval (page 4 [0058]).

Consider claim 6, Ishii further teaches selecting an optimal coding and modulation scheme for each scheduled mobile radio to achieve an acceptable error rate (page 7 [0101]).

Consider claim 7, Ishii further teaches splitting shared radio channel resources among the multiple mobile radios using a resource allocation scheme (page 4 [0057]).

Consider claim 8, Ishii further teaches the radio communications system is a CDMA-based system where radio channel resources include scrambling codes, each scrambling code having an associated channelization code tree, and wherein the resource allocation scheme allocates a scrambling code to the shared radio channel and allocating one or more different channelization codes associated with the shared radio channel scrambling code to each antenna beam during the predetermined transmission time interval (page 4 [0066]).

Consider claim 9, Ishii further teaches the radio communications system is a CDMA-based system where radio channel resources include scrambling codes, each scrambling code having an associated channelization code tree, and wherein the resource allocation scheme allocates a different scrambling code for each antenna beam during the predetermined transmission time interval (page 7 [0111]).

Consider claim 10, Ishii further teaches the resource allocation scheme divides the shared radio channel resources evenly between the multiple mobile radios (page 5 [0082]).

Consider claim 11, Ishii further teaches the resource allocation scheme divides the shared radio channel resources in proportion to each mobile radio's reported detected channel quality (page 5 [0082]).

Consider claim 12, Schmidl further teaches the resource allocation scheme divides the shared channel resources using a non-linear relationship between two or more of the following: amount of channel resources, throughput, quality of service, and detected channel quality (page 4 [0049]).

Consider claim 13, Schmidl further teaches the non-linear relationship is stored in a look-up table (page 4 [0049]).

4. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view of Schmidl and futher in view of Kanemoto et al. (U.S PAT. 6,928,296 hereinafter, "Kanemoto").

Consider claim 14, Ishii and Schmidl, in combination, fails to teaches detecting a change in radio channel conditions, and updating the look-up table based on changed radio channel conditions.

However, Kanemoto teaches detecting a change in radio channel conditions, and updating the look-up table based on changed radio channel conditions (col. 7 line 63 through col. 8 line 14).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Kanemoto into view of Ishii and Schmidl, in order to provide a base station apparatus and radio communication method that make it

possible to prevent a major deterioration of dedicated channel signal reception quality even when an adaptive array is used for shared channel signal transmission.

Consider claim 15, Kanemoto further teaches the transmitting to the multiple mobile radios in the cell during the predetermined transmission time interval using multiple antenna beams prevents a flashlight effect from disrupting the channel quality detection performed by the mobile radios (col. 15 line 57 through col. 16 line 15).

5. Claims 16-22 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view Frank (U.S PUB. 2004/0063468).

Consider claim 16, Ishii teaches a radio base station for use in a radio communications system, comprising: multiple antennas associated with a cell for generating multiple antenna beams, each beam covering only a portion of the cell (fig. 2 abstract and page 4 [0060]); and a channel scheduler for selecting multiple mobile radios to receive a transmission over a shared radio channel during a predetermined transmission time interval (page 7 [0111] and [0112]).

Ishii does not explicitly show that one or more transmit buffers; and transceiving circuitry for transmitting information stored in the one or more transmission buffers over the shared radio channel via the adaptive antenna array to the multiple mobile radios in the cell during the same predetermined transmission time interval using multiple antenna beams to spread out the interference caused by the transmission.

In the same field of endeavor, Frank teaches one or more transmit buffers (208) (page 2 [0020]); and transceiving circuitry for transmitting information stored in the one or more transmission buffers over the shared radio channel via the adaptive antenna array to the multiple mobile radios in the cell during the same predetermined transmission time interval using multiple antenna beams to spread out the interference caused by the transmission (page 2 [0020] page 3 [0028] and page 8 [0082]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, one or more transmit buffers; and transceiving circuitry for transmitting information stored in the one or more transmission buffers over the shared radio channel via the adaptive antenna array to the multiple mobile radios in the cell during the same predetermined transmission time interval using multiple antenna beams to spread out the interference caused by the transmission, as taught by Frank, in order to provide the power of the signals transmitted in each beam may be individually aligned so as to optimize the quality of the received signal and minimize interference resulting from transmission of signals in multiple beams in a same sector.

Consider claim 17, Ishii further teaches the interference from the transmission appears as white noise in time and in space in the cell and one mobile radio is selected for one of the antenna beams (page 2 [0024]).

Consider claim 18, Ishii further teaches the white noise is white additive Gaussian noise (page 2 [0024]).

Consider claim 19, Ishii further teaches the radio channel is a high speed-downlink shared channel (page 2 [0020]).

Consider claim 20, Ishii further teaches a channel quality controller for receiving reports from mobile radios of a detected channel quality of a pilot signal transmitted in the cell (page 3 [0028]), wherein the scheduler is configured to schedule transmissions to multiple mobile radios over the HS-DSCH for each transmission time interval based on the received reports (page 4 [0058]).

Consider claim 21, Ishii further teaches the scheduler is configured to select one of the mobile radios to receive a transmission from one of the antenna beams based on the received reports (page 2 [0025]), and wherein the transceiving circuitry is configured to transmit the information over the HS-DSCH using each antenna beam to each selected mobile radio during the predetermined transmission time interval (page 4 [0058]).

Consider claim 22, Ishii further teaches the scheduler is configured to select an optimal coding and modulation scheme for each scheduled mobile radio to achieve an acceptable error rate (page 7 [0101]).

Consider claim 23, Ishii further teaches the scheduler is configured to split the radio resources of the shared radio channel among the multiple mobile radios using a resource allocation scheme (page 4 [0057]).

Consider claim 24, Ishii further teaches the radio communications system is a CDMA-based system here radio channel resources include scrambling codes, each scrambling code having an associated channelization code tree, and wherein the resource allocation scheme includes allocating a scrambling code to the shared radio channel and allocating one or more different channelization codes associated with the shared radio channel scrambling code to each antenna beam during the predetermined transmission time interval (page 4 [0066]).

Consider claim 25, Ishii further teaches the radio communications system is a CDMA-based system where radio channel resources include scrambling codes, each scrambling code having an associated channelization code tree, and wherein the resource allocation scheme includes transmission allocating a different scrambling code for each antenna beam during the predetermined time interval (page 7 [0101]).

Consider claim 26, Ishii further teaches the resource allocation scheme includes dividing the shared radio channel resources evenly between the multiple mobile radios

(page 5 [0082]).

Consider claim 27, Ishii further teaches the resource allocation scheme includes dividing the shared radio channel resources in proportion to each mobile radio's reported detected channel quality (page 5 [0082]).

Consider claim 28, Ishii further teaches the resource allocation scheme includes dividing the shared channel resources using a non-linear relationship between two or more of the following: amount of channel resources, throughput, quality of service, and detected channel quality (page 4 [0049]).

Consider claim 29, Ishii further teaches the non-linear relationship is stored in a look-up table (page 4 [0049]).

Consider claim 32, Frank further teaches the multiple antennas include an adaptive antenna array (page 2 [0020]).

Consider claim 33, Ishii further teaches the multiple antennas include transmit diversity antennas (page 2 [0018]).

6. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view of Frank and futher in view of Kanemoto.

Consider claim 30, Ishii and Frank, in combination, fails to teaches the scheduler is configured to: detect a change in radio channel conditions, and update the look-up table based on changed radio channel conditions.

However, Kanemoto teaches the scheduler is configured to: detect a change in radio channel conditions, and update the look-up table based on changed radio channel conditions (col. 7 line 63 through col. 8 line 14).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Kanemoto into view of Ishii and Frank, in order to provide a base station apparatus and radio communication method that make it possible to prevent a major deterioration of dedicated channel signal reception quality even when an adaptive array is used for shared channel signal transmission.

Consider claim 31, Kanemoto further teaches the transmission via the adaptive antenna array to multiple mobile radios in the cell during the same predetermined transmission time interval using multiple antenna beams prevents a flashlight effect from disrupting the channel quality detection performed by the mobile radios (col. 15 line 57 through col. 16 line 15).

7. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view of Kanemoto.

Consider claim 34, Ishii I teaches a method for use in a radio communications system with a radio base station that includes multiple antennas associated with a cell, comprising: selecting mobile radios to receive a transmission over a shared radio channel using a beam transmission sequence order (page 4 [0058]); and transmitting information over the shared radio channel using one beam to one or more mobile radios following the beam transmission sequence order for multiple predetermined time intervals (page 7 [0113]).

Ishii does not explicitly show that performing beam switching in accordance with the beam transmission sequence order after multiple transmission time intervals so that the flashlight effect is avoided.

In the same field of endeavor, Kanemoto teaches performing beam switching in accordance with the beam transmission sequence order after multiple transmission time intervals so that the flashlight effect is avoided (col. 15 line 57 through col. 16 line15 e.g., in a communication terminal located in the vicinity of a communication terminal to which the DSCH is assigned, it becomes possible for increases in dedicated channel signal transmission power to track changes in interference power by downlink transmission power control for a dedicated channel signal, and it is possible to reduce deterioration of reception quality due to interference received from a DSCH signal. Therefore the flashlight effect is avoided).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, performing beam switching in accordance with the beam transmission sequence order after multiple transmission time intervals so that the

flashlight effect is avoided, as taught by Kanemoto, in order to provide a base station apparatus and radio communication method that make it possible to prevent a major deterioration of dedicated channel signal reception quality even when an adaptive array is used for shared channel signal transmission.

Consider claim 35, Ishii further teaches the interference from the transmission appears as white noise in time and in space (page 2 [0024]).

Consider claim 36, Ishii further teaches the shared radio channel is a high speed-downlink shared channel (page 2 [0020]).

Consider claim 37, Ishii further teaches receiving reports from mobile radios of a detected channel quality of a pilot signal transmitted in the cell (page 3 [0028]), and scheduling transmissions to one of the mobile radios over the HS-DSCH for more than one transmission time interval in accordance with the beam transmission sequence based on the received reports (page 4 [0058]).

Conclusion

8. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window

Randolph Building

401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571) 272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Nguyen
Examiner
Art Unit 2618

TN

NAY MAUNG
SUPERVISORY PATENT EXAMINER